

Remarks

Claim 11 is herein amended. Support for this amendment is found in the specification as filed, page 2, lines 23-30.

Claims 1-9 and 11 remain pending. No new matter has been added, and no new material presented that would necessitate an additional search on the part of the Examiner.

Claims are not obvious

The Office Action on page 5 rejects claim 1 under 35 U.S.C. §103(a) in view of Toyoda et al. (U.S. patent number 6,630,953, issued October 7, 2003), Nobuoka (U.S. patent number 5,926,216, issued July 20, 1999) and Uematsu (U.S. patent number 5,892,551, issued April 6, 1999). Applicants characterize each independent claim, then each reference, then analyze the combination of references.

Claim 1 is directed to a camera for recording pictures that has an image sensor for receiving a picture, a processing unit for processing the picture, and an end processing unit. The camera contains, between the processing unit and the end processing unit, a means for removing light modulation between different fields of the picture by averaging stored images having the same light modulation. The means for removing light modulation also comprises a motion detector for detecting the effect of motion on a scene.

Toyoda et al., U.S. patent number 6,630,953, issued October 7, 2003

Toyoda shows an imaging apparatus for correcting flicker by detecting the mean luminance of two areas of a picture signal divided by a movable boundary. See Toyoda et al., column 1, lines 43-46. The flicker in each of the two areas is corrected to derive a correction-resultant area in response to the mean luminance. Ibid, column 1, lines 52-53. The

two correction-resultant areas are then combined into a correction-resultant picture. *Ibid*, column 1, lines 55-57.

Toyoda fails to teach or suggest any camera having an image sensor for averaging stored images to remove light modulation, as is the subject matter of Applicants' claim 1 as here amended.

Further, Toyoda fails to specifically disclose averaging stored images, as admitted by the Office Action on page 5.

In addition, Toyoda fails to specifically disclose a light modulation removal means comprising a motion detector for detecting the effect of motion on a scene, as admitted in the Office Action on page 5.

Nobuoka, U.S. patent number 5,926,216, issued July 20, 1999

Nobuoka shows an image sensing apparatus capable of sensing an image with high signal to noise ratio. See Nobuoka, column 2, lines 3-5. Nobuoka shows an image sensing apparatus that outputs an image signal, which includes an optical focusing system for focusing an image on a photo-sensing surface, photoelectric conversion means for converting an optical image to generate an electric signal, integration means for integrating the electric signal, integration control means, and output means for generating the image signal. *Ibid*, column 2, lines 6-22. Nobuoka shows a predetermined luminance value, temporarily storing image signals in a frame memory, and feeding stored images back to an adder. *Ibid*, column 4, lines 64-68. The image data is added with a newly inputted signal and the added signal is stored in the first frame memory until the luminance level of the image

signal stored in a first frame memory is greater or equal to the predetermined luminance value. *Ibid*, column 5, lines 4-9.

Nobuoka shows sequential images stored sequentially in frame memories. However, Nobuoka states:

Thereafter, the images stored in the four frame memories are read and processed by the signal processing circuit, and outputted from the output terminal. [See Nobuoka, column 7, lines 30-34, emphases added]

The passage above is typical in that nowhere does Nobuoka show any averaging of any stored images, as is the subject matter of Applicants' claim 1.

Nobuoka fails to teach or suggest averaging stored images, let alone averaging stored images with the same light modulation, as is the subject matter of Applicants' claim 1.

Nobuoka also fails to teach or suggest any light modulation removal means, as is also the subject matter of Applicants' claim 1.

Further, Nobuoka fails to specifically disclose a light modulation removal means comprising a motion detector for detecting the effect of motion on a scene, as admitted in the Office Action on page 5, and further fails to teach or suggest any light modulation removal means comprising a motion detector for detecting the effect of motion on a scene.

Uematsu, U.S. patent number 5,892,551, issued April 6, 1999

Uematsu shows a flicker reducing circuit in a terminal that displays character data and image data on a display unit. See Uematsu, column 1, lines 6-9. Uematsu's flicker reducing circuit contains two delay units. One of these units delays composite data processed in the display processing unit by a process time in the vertical low-pass filter, and then outputs the result. Another of these units receives character image data formed of only

character data, among data processed in the display processing unit, and delays the data by a processing time in the vertical low-pass filter, then outputs the result. *Ibid*, column 1, lines 36-42. Uematsu's circuit reads character data and composite data out of a memory unit to display them. *Ibid*, column 1, lines 31-32.

Uematsu fails to teach or suggest a camera. Further, Uematsu fails to teach or suggest, or even mention averaging, let alone averaging stored images having the same light modulation, as is the subject matter of Applicants' claim 1.

Further, Uematsu fails to teach or suggest detecting the effect of motion on a scene via the light modulation removal means, as is the subject matter of Applicants' claim 1.

The Office Action on pages 5-6 alleges that Uematsu teaches a flicker reducing circuit consisting of a noise reducer in which mosquito noises are removed through motion detection between a previous frame and the following frame, and a motion detection signal in motion detection. However, Applicants assert that Uematsu fails to teach or suggest a means for removing light modulation by averaging stored images having the same light modulation, as is the subject matter of Applicants' claim 1.

For any of these reasons, claim 1 is not obvious in view of the combination of Toyoda, Nobuoka and Uematsu. Applicants respectfully request that this rejection be withdrawn.

The Office Action on page 6 rejects claims 2-7 in view of Toyoda, Nobuoka, Uematsu, and further in view of Callahan (U.S. patent number 6,380,985, issued April 30, 2002). Claims 2-7 depend directly or indirectly from claim 1 and incorporate all of the

subject matter of claim 1, and contain additional subject matter. Toyoda, Nobuoka and Uematsu are characterized above.

Callahan, U.S. patent number 6,380,985, issued April 30, 2002

Callahan shows a system for processing a video stream for a television. See Callahan, Figs. 1 and 2. Callahan shows filtering a data stream to produce a reduced-size display image while minimizing flicker. *Ibid*, column 1, lines 46-49. The Callahan system contains a resizing and filtering component to remove and resize two fields of interlaced scan lines by averaging pairs of sequential scan lines, producing averaged line pairs. *Ibid*, column 5, lines 9-11. The component then filters the averaged line pairs to remove interlace flickering. *Ibid*, column 5, lines 13-17.

The subject matter of Applicants' claim 1 and its dependent claims are directed to a camera that contains a means for removing light modulation between different fields of the picture by averaging stored images having the same light modulation. The means for removing light modulation also comprises a motion detector for detecting the effect of motion on a scene.

Callahan fails to teach or suggest any stored images, let alone averaging stored images, let alone averaging stored images having the same light modulation. Callahan's averaged line pairs are not a teaching or suggestion of a camera, or of averaging stored images with the same light modulation.

Further, Callahan fails to teach or suggest a motion detector, as admitted by the Office Action dated May 4, 2005 (page 8, section 11).

Further, the Office Action on page 9 admits that Toyoda, Nobuoka, Uematsu and Callahan fail to teach or suggest means to correct consecutive images to the same temporal position using motion compensation techniques prior to the averaging.

Claims 2-7 depend directly or indirectly from claim 1, and therefore incorporate all of the subject matter of claim 1 as well as having additional subject matter. As Callahan fails to cure the defects of Toyoda, Nobuoka and Uematsu with respect to claim 1, from which rejected claims 2-7 depend, and as the subject matter in claim 1 as here amended is not obvious in view of the combination of Toyoda, Nobuoka, Uematsu, and Callahan, thus claims 2-7 also are not obvious in view of these references alone or in any combination.

Applicants respectfully request that rejection of claims 2-7 under 35 U.S.C. §103(a) be withdrawn.

Thompson et al., U.S. patent number 6,489,998, issued December 3, 2002

The Office Action rejects claims 8 and 9 in view of Toyoda, Uematsu, Callahan and Thompson et al. (U.S. patent number 6,489,998, issued December 3, 2002). As a preliminary matter, claims 8 and 9 depend directly or indirectly on claim 1, and incorporate all of the subject matter of claim 1 as here amended and the subject matter of intervening claims, and contain additional subject matter.

Thompson shows a digital image processor that contains a deinterlacing processor. Thompson's deinterlacing processor receives an interlaced video stream and transmits a deinterlaced video stream. See Thompson, column 3, lines 1-5. This deinterlacing processor performs frequency analysis on the interlaced video stream to output deinterlaced video

stream with reduced motion artifacts. *Ibid*, column 3, lines 5-8. Motion artifacts are detected by analyzing frequency information in a single video frame. *Ibid*, column 3, lines 12-14.

Thompson fails to teach or suggest averaging stored images with the same light modulation, as is the subject matter of Applicants' claim 1. Thompson does not even mention a light modulation removal means that also detects the effect of motion.

Further, the Office Action on page 10 admits that Toyoda and Thompson fail to teach or suggest averaging the different fields of dependence in motion, and/or locations with low respectively high luminance locations.

Claims 8 and 9 depend directly or indirectly on claim 1 and contain all of the subject matter of claim 1, as well as additional subject matter. As Thompson fails to cure the defects of Toyoda, Nobuoka, Uematsu and Callahan with respect to claim 1, claims 8 and 9 are not obvious in view of these references.

Applicants respectfully request that rejection of claims 8 and 9 under 35 U.S.C. §103(a) be withdrawn.

The Office Action on page 9 rejects independent claim 11 under 35 U.S.C. §103(a) in view of Toyoda and Thompson and further in view of Uematsu and Van Rooy. Toyoda, Thompson and Uematsu are characterized above.

Claim 11 as here amended is directed to a method of removing light modulation during recording pictures with an image sensor. The method has steps of receiving a picture, processing the picture, removing the light modulation by storing different field of the picture and averaging the stored different fields in dependence of motion, and/or locations with low

respectively high luminance locations. The removing step includes averaging stored images having the same light modulation, and detecting the effect of motion on a scene.

Van Rooy, U.S. patent number 6,657,659, issued December 2, 2003

Van Rooy shows a method of compensating an image signal for AC light source induced fluctuations. See Van Rooy, column 2, line 43-46. The method in Van Rooy has steps of generating an average signal representing the average image signal content, and processing the image signal to obtain a corrected signal. Ibid, column 2, line 46-49.

Van Rooy fails to teach or suggest averaging stored images with the same light modulation, as is the subject matter of claim 11 as here amended. Further, Toyoda, Thompson and Van Rooy fail to teach or suggest a method of detecting an effect of motion on a scene, as admitted in the Office Action on page 10.

Further, the Office Action on page 10 admits that Toyoda fails to teach or suggest a method of storing different fields of the picture. Toyoda also fails to teach or suggest a method of averaging stored images with the same light modulation as a means of removing light modulation, as is the subject matter of Applicants' claim 11 as here amended.

The Office Action on page 10 also admits that Toyoda and Thompson fail to teach or suggest averaging the different fields in dependence of motion, and/or locations with low respectively high luminance locations.

Further, the Office Action on page 10 admits that Toyoda, Thompson and Van Rooy fail to teach or suggest a method of detecting the effect of motion on a scene.

The Office Action on page 10 asserts that Uematsu teaches a flicker reducing circuit which removes noise through motion detection between a previous frame and the following

frame, and a motion detection signal in motion detection. Applicants assert that Uematsu fails to teach or suggest a method for removing light modulation by storing and averaging stored different fields of the picture in dependence of motion, as is the subject matter of claim 11 as here amended.

For any of these reasons, claim 11 as here amended is not obvious in view of the combination of Toyoda, Thompson, Uematsu and Van Rooy. Applicants respectfully request that this rejection be withdrawn.

Legal analysis

Whether an invention would have been obvious under 35 U.S.C. §103(a) is a legal conclusion based on underlying findings of fact. *In re Kotzab*, 217 F.3d 1365, 1369 (Fed. Cir. 2000).

The *Manual of Patent Examining Procedure* states: "[t]o establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." [emphases added] *Manual of Patent Examining Procedure* §2142 (8th Ed. Rev.2, May 2, 2004); *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicants respectfully traverse the rejection, and show that the facts of the case and the relevant case law indicate that the invention would not have been obvious to one of ordinary skill in the art, at the time the application was filed, for the following reasons.

To establish a *prima facie* case for obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. *Manual of Patent Examining Procedure*, §2143.03, p. 108 (8th Ed. Rev.2, May 2, 2004); *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). We show above that none of the references alone or in any combination teach or suggest all of the claim limitations.

Analysis of references combined

To establish obviousness based on a combination of the elements disclosed in the prior art in the absence of any hindsight, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant. *Id.* The teaching or suggestion, not merely to make the claimed combination, but also of a reasonable expectation of success, must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488; 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

None of Uematsu, Nobuoka, Callahan, Thompson or Toyoda, the more recent of the primary references, cite Van Rooy, the earliest reference, and fail even to cite any of the others. Under the legal criteria discussed above, Uematsu, Nobuoka, Callahan, Thompson, and Toyoda fail to provide any motivation for making any combination with Van Rooy, let alone suggest that such a combination would have been successful. As there is no citation in Uematsu, Nobuoka, Callahan, Thompson or Toyoda to Van Rooy, there can be no teaching

or suggestion to combine these references. For these reasons also, the combination of these references fails to teach or suggest the present claims.

As none of Uematsu, Nobuoka, Callahan, Thompson, Toyoda or Van Rooy provide any explicit nor implicit motivation to one of ordinary skill in the art to have combined any elements of these primary references to have arrived at the present claims of Applicant's invention, then making the combination is using Applicant's own specification as a blueprint to reconstruct the invention, which is impermissible hindsight, viz., extracting merely an element or word from each reference, to attempt to reconstruct Applicant's claims when neither reference explicitly or implicitly teaches or suggests such a combination, let alone teaches or suggests a reasonable expectation of success.

The knowledge generally available to one of ordinary skill in the art would not have rendered the claims of the present invention obvious

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so, found either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art. The legal criteria to determine the extent to which such knowledge is in the general art, rather than in a specification, has been extensively addressed by a recent court decision analyzed below.

In *National Steel Car, Ltd. v. Canadian Pacific Railway, Ltd.*, 357 F.3d 1319, 69 U.S.P.Q.2d 1641 (Fed. Cir. 2004), the court addresses the issue of when motivation to combine references can be considered proper. In *National Steel Car*, the claims at issue were directed to a railcar with a "drop deck". *Id.* at 1322. The court determined that the motivation to combine the two prior art references is implicit in the knowledge of one of

ordinary skill in the art, because both of the two references independently arrived at the "drop deck" railcar design. See *Id.* at 1337-1340. Since two different inventors in the field independently arrived at the claimed invention, the court decided that the motivation to combine the two cited prior art references was implicit in the knowledge of one of ordinary skill in the art. See *Id.*

In the references cited in the present Office Action, Toyoda shows an imaging apparatus for correcting flicker by detecting the mean luminance of two areas of a picture signal divided by a movable boundary. See Toyoda et al., column 1, lines 43-46.

Nobuoka shows an image sensing apparatus that outputs an image signal, which includes an optical focusing system for focusing an image on a photo-sensing surface, photoelectric conversion means for converting an optical image to generate an electric signal, integration means for integrating the electric signal, integration control means, and output means for generating the image signal. *Ibid*, column 2, lines 6-22.

Uematsu shows a flicker reducing circuit in a terminal that displays character data and image data on a display unit. See Uematsu, column 1, lines 6-9.

Callahan shows filtering a data stream to produce a reduced-size display image while minimizing flicker. *Ibid*, column 1, lines 46-49.

Thompson shows a digital image processor that contains a deinterlacing processor. See Thompson, column 3, lines 1-5.

Van Rooy shows a method of compensating an image signal for AC light source induced fluctuations. See Van Rooy, column 2, line 43-46.

Most important, these references, because they fail to cite each other, necessarily fail to teach or suggest how to modify any of the technology of any of the other references in order to combine with the other references to arrive at the subject matter of the claims of the present application. Therefore, clearly, the narrow holding of *National Steel Car* is inapposite to the present claims.

The facts of *National Steel Car* are readily distinguishable from the facts of the present case. Unlike in *National Steel Car*, in the present case there is no prior art disclosure that teaches or suggests all of the elements of Applicant's claims. Additionally, there is no prior art reference that discloses the combination of references cited by the Office Action.

The lack of teachings by others of the Applicant's claims distinguishes the present case from *National Steel Car*, and demonstrates that the motivation to combine the references cited by the Office Action was not implicit in the knowledge generally available to one of ordinary skill in the art at the time the present application was filed.

From this analysis it is clear that the present claims have been used as a blueprint to pick and choose references to reconstruct the invention, which is impermissible hindsight.

For any of the above reasons, Applicants assert that claims 1-9 and 11 are not obvious, and respectfully request that the rejection be withdrawn.

Summary

On the basis of the foregoing reasons, Applicants respectfully submit that the pending claims are in condition for allowance, which is respectfully requested.

If there are any questions regarding these remarks, the Examiners are invited and encouraged to contact Applicants' representative at the telephone number provided.

Respectfully submitted,

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August 10, 2006